********** INSTALLATION INSTRUCTIONS ******************

Follow these first two cautions always or damage may result to your computer and / or the 128 K RAMCARD !

1. Be sure to install the 128 K RAMCARD with the solder side of the board facing toward the keyboard. Stated another way: the components are facing away from the keyboard.

2. Install and remove the 128 K RAMCARD only with the power switched off of the computer.

The steps for accessing the inside of your Atari 800 computer are included with your computer where it describes how to remove the top cover and how to add aditional ram modules. If you don't have access to the manual that was shipped with the computer, these brief instructions should help.

1. Open the cartridge door and observe whether your machine has two thumb latches or two screws with washers holding the top cover in place. With the thumb latches, press them to the side and lift the top panel up about a half inch and pull the panel towards you. If your machine has screws with flat washers, you will need to remove them before removing the top panel in the same manner.

2. Four open slots should be visible. The first slot contains a ROM card, also referred to as a personality board. The next three slots will probably contain 16 K ram modules, or memory boards. Some of the Atari 800s were shipped with only one or two of these cards. What we want to end up with is slot two (first memory board) having a 16 K board, slot three (middle or second memory board) having the 128 K RAMCARD, and the last open slot, slot four (third or rearmost memory board) having a 16 K board.

3. Replace the top panel in the reverse order it was removed. Be sure the tangs in the rear portion of the panel fit into the casting slots or the back portion of the panel may not lay down flat.

*********************** WARRANTY STATEMENT ***********************

All warranty repairs must be performed by Crystal Computer Products. We require that you send your completed warranty application within twenty days of purchase to initialize your warranty. Failure to do this may void the warranty.

If the 128 K RAMCARD fails within ninety days after purchase due

to manufacturing defects, the unit will be repaired and returned to the customer free of charge. The defective unit must be returned to Crystal Computer Products at the customer's expense. A Material Return Authorization (MRA) number is required before we can receive your 128 K RAMCARD. The MRA number may be obtained by contacting Crystal Computer Products.

If the 128 K RAMCARD fails within ninety days after purchase due to abuse, the customer will pay for shipping, parts and labor necessary to repair the 128 K RAMCARD.

Replacement parts are available from Crystal Computer Products for up to two years after purchase on all registered 128 K RAMCARDS.

CCP liabilities are limited to only repair or replacement of the 128 K RAMCARD if it should fail to function as designed due to manufacturing defects within ninety days of purchase. No other liabilities are implied or expressed.

CCP cannot under any circomstances be held liable for any damages, direct or incidental, arising from the use or misuse of this product.

CCP cannot under any circumstances be held liable for any damages to any equipment connected to this device.

The completed warranty application must be returned to CCP within twenty days of purchase for the warranty to be effective.

************************* PRODUCT DESCRIPTION *********************

The 128 K RAMCARD is designed, manufactured, copyrighted and is a trademark of Crystal Computer Products, also called "CCP".

The 128 K RAMCARD is compatible with all software designed to utilize the Axlon 128 K Rampower, which was being manufactured by Axlon, Incorporated. Because Axlon no longer manufactures the 128 K Rampower, and because increasing market demand for a memory upgrade for the Atari 800 was not being adequately satisfied by anyone, CCP now offers an easy-to-install upgrade to fill that market demand.

Some of the 128 K RAMCARD noteworthy features include:

1. Computer aided board design for a neat and clean layout of both the components and the board circuit.

2. The 128 K RAMCARD is shipped without an enclosing case to allow it to run cooler for improved reliability, and it can be grasped more easily for easier removal. Also, without this cost, the price can be kept minimal.

3. EVERY SINGLE 128 K RAMCARD is fully tested within an Atari 800 computer and verified to be fully functioning. We are

absolutely certain that 100% of our 128 K RAMCARD's leave us in 100% working order. Please observe static precautions to keep your 128 K RAMCARD in working order.

4. A two position jumper labeled "J1" allows the user to manually configure the 128 K RAMCARD to be a 16 K or 128 K ram card. This feature was added because some software is not compatible with this upgrade. Your unit was shipped with this jumper configured in the 128 K position either with a removable small wire jumper or a trace jumper which can be cut by the user. This will not affect the warranty to cut the J1 trace jumper if your board was shipped with one.

For added convenience the user may add a single pole double throw, "ON-ON" switch for easy switching between 16 K and 128 K configuration of the 128 K RAMCARD. To do this connect three wires from the "ON-ON" switch to "J1" on the 128 K RAMCARD. Be sure to remove any jumper that is installed in "J1" before connecting the three wires. "J1" has three connection points labeled "V", "C" and "G" for voltage, common and ground. If you choose to add a switch, be sure that common is attached to the center pole of the "ON-ON" switch. For further assistance or information contact CCP. A switch kit is available from CCP for $ 7.95, postage paid by CCP. If CCP installs the switch kit the price is $ 12.95, postage paid by CCP. Radio Shack has a slide switch (275-407) that can be used for a professional, concealed look by installing it behind the first letter "A" in ATARI 800 that is located on the left side of the cartridge door. The preferred installation must include a power off condition, therefore the door must be opened to change the switch setting.
Because the switch has six solder lugs instead of three, we recommend that you bend three of the lugs so they just touch the other three, then solder them together when attaching the three wires.

5. For those who wish to have the machine's addressing mode slightly configured to reduce some software incompatibilities, David Young of CDY Consulting has recommended the installation of an address "patch line", which CCP prefers to call the "CDY patch line modification" or just "CDY patch".

CCP has accommodated the "CDY patch" by designing the 128 K RAMCARD with a place for installing it labeled as J2. All 128 K RAMCARDs have J2 jumpered with a removable small wire jumper or a trace jumper which can be cut by the user. This will not affect the warranty to cut the J2 trace jumper if your board was shipped with one. The "CDY patch" requires the jumper to be removed from J2 and an insulated small diameter wire connected to pad one of J2. This wire is the "CDY patch line". After connecting this to the 128 K RAMCARD, route it to the first ramcard and connect it to a pad that is connected to the eighteenth gold finger on the component side of the first ramcard. The eighteenth gold finger can be located by counting from left to right with the component side facing you and the

gold fingers at the bottom.

If the first ramcard is an Atari 16 K board a connection for the "CDY patch" can be found by soldering to pin 1 of chip Z501 (a 74LS10 IC). You can solder to either the IC leg or to the solder side of the board to the IC socket pad. CCP recommends soldering to the pad instead of the IC leg because IC chips do not tolerate excessive heat very well. If you solder to an IC chip, apply heat less than five seconds with a low wattage pencil-type soldering iron. Be sure to remove the IC before soldering to either one because the chip exerts enough tension on the plastic socket to possibly deform the socket internally if it becomes soft through the soldering process.

An alternate method that eliminates the visible wire under the top panel requires installation of the "CDY patch" to the bottom of the Atari 800 motherboard. A connection is made from pin eighteen of the first ramcard socket to an unused pin of the second ramcard socket. Adding a wire to the 128 K RAMCARD from J2, pad one, to the gold finger that corresponds to the same unused socket pin for the second ramcard slot completes this installation.

READ 4A

BE CAREFUL! Improperly installing the "CDY patch" may permanently damage your machine.

By adding both the 16K-128K selection switch and the "CDY patch", you have maximized the flexibility of the 128 K RAMCARD.

NOTE: If only one modification is to be made, CCP has found that the 16K-128K selection switch is used more often than the "CDY patch".

FOR YOUR INFORMATION:

The IC pin numbering sequence can be determined by following this explanation:
     A. Look on the top surface for a notch or indentation at one end of the chip.
     B. Orient the chip so that the notched end is facing up or away from you in the twelve o'clock position.
     C. Pin numbering begins in the upper left corner or at eleven o'clock and counts down or counter-clockwise forming a letter "U".
     D. The last pin number is located in the upper right corner or one o'clock. This would also be found at the upper right tip of the letter "U".

*********************** SPECIAL NOTICE **************************

CCP did not package this product with any software as a cost reduction effort. Instead, we leave it up to distributors and dealers, as to what software, if any, will be included in this package. Any software that may be packaged with this is courtesy of your distributor or dealer and may or may not affect pricing.

Your 128 K RAMCARD has been modified to make it easier for you to add the "hidden" CDY Patch. A wire has been added from J2, pad one, to an unused gold finger. This has an equivalent connection on the bottom of the Atari 800 motherboard, which is also unused.

A connection is made with a jumper (slightly longer than an half inch) from the corresponding unused socket pin to the eighteenth pin of the first ramcard socket.

Stated another way: The added motherboard jumper should connect directly across to the nearest socket pin of the second ramcard slot.
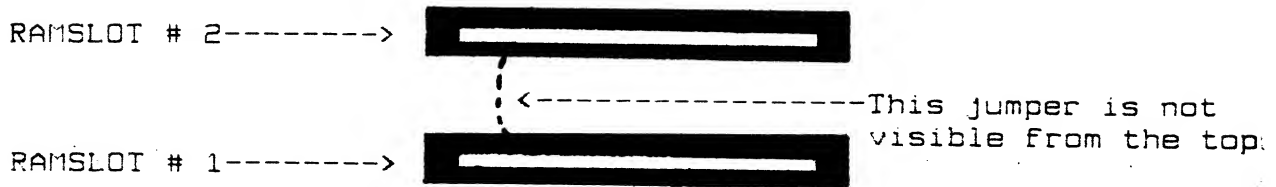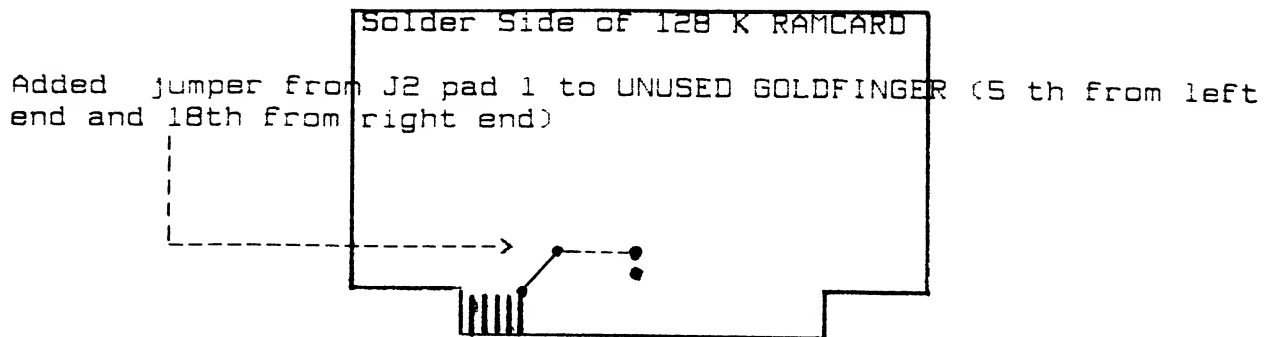
Do not accidently connect it between the ROM slot and the first RAM slot. This is an easy mistake to make. Be careful to double check your work!

When the "hidden" CDY Patch is properly installed, no incompatibilities are added to the computer. The computer can be reconfigured to original condition without removing the jumper from the motherboard. The added connection is not used by other products and therefore is only used by the 128 K RAMCARD.
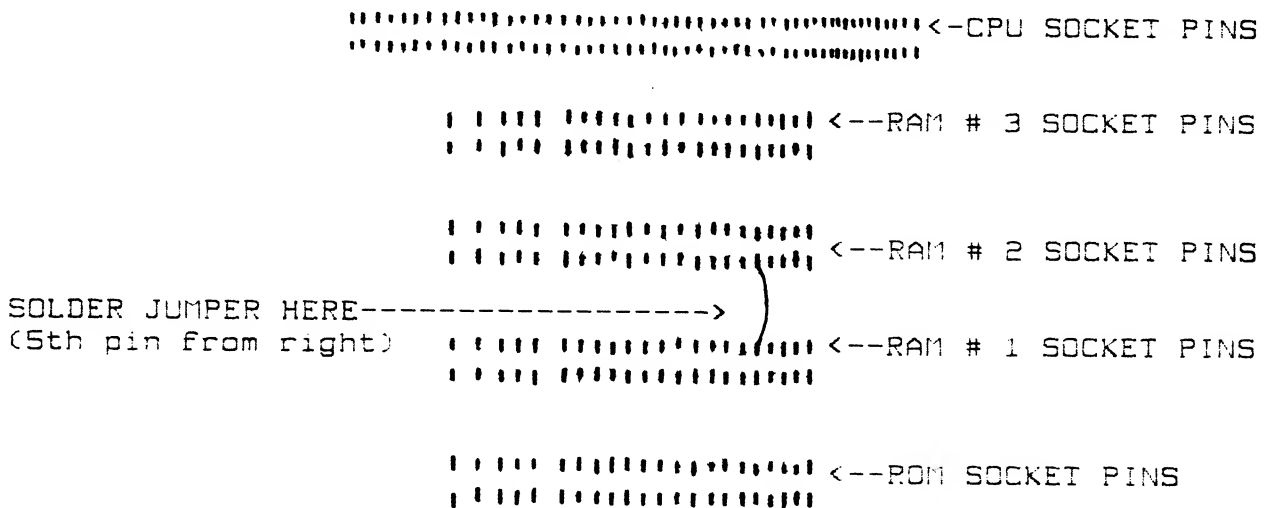
If you modify or do any soldering to the enclosed 128 K RAMCARD, your warranty will be voided because all of the CCP-approved modifications have been made.

CCP is not liable for the incorrect installation of the CDY Patch, nor will CCP warrant the modification for performance. All risks are accepted by the user. CCP is not liable for any consequences associated with the installation of the CDY Patch.

Details of "HIDDEN" CDY PATCH Installation

Solder Side of 128 K RAMCARD

Added jumper from J2 pad 1 to UNUSED GOLDFINGER (5 th from left end and 18th from right end)

RAMSLOT # 2-------->

<-----------------This jumper is not visible from the top.

RAMSLOT # 1-------->

===

PARTIAL BOTTOM VIEW OF ATARI 800 MOTHERBOARD

```
||||||||||||||||||||||||||||||||||||||||||||||<-CPU SOCKET PINS
''||||'|'|||||||||||||||||||||||||||||||||||||

    | | ||| |||||||||||||||||||| <--RAM # 3 SOCKET PINS
    | | |||| ||||||||||||||||||||

    | | ||| ||||||||||||||||||| <--RAM # 2 SOCKET PINS
    | | |||| |||||||||||||||||||
SOLDER JUMPER HERE------------------>  )
(5th pin from right)    | | ||| ||||||||||||||||||| <--RAM # 1 SOCKET PINS
    | | |||| ||||||||||||||||||||

    | | ||| ||||||||||||||||||| <--ROM SOCKET PINS
    | | |||| |||||||||||||||||||
```

How to "Burn-In" a CCP Product

Almost all electronic products produced today are briefly tested to ensure they do not fail under normal use by consumers. However, many consumers lack confidence in a product's reliability until they've had it long enough to develop a track record for it. Except for purchasing an extended warranty, most consumers do not know that they can perform a simple reliability test, called "Burn-In", which can improve consumer confidence.

The burn-in of an electronic product INCREASES the probability of it's failure during the test. If it does not fail during the test, it probably will not fail during NORMAL use. Some manufacturers burn-in their products to reduce warranty work and build a good reputation, but most compromise with a partial burn-in which can sometimes allow enough failures to shake consumer confidence. Consumer confidence can be improved by implementing complete burn-ins.

If you own a product manufactured by Crystal Computer Products that has a blue circuit board, the burn-in procedure is simple:

1. Make sure the product works properly before the burn-in. If any diagnostics are available, use them to make sure the product fully functions.

2. Let the product remain powered up for twenty-four hours. If continuous diagnostics are available, run them for the twenty-four hour period.

3. At the end of the twenty-four hours, use the device and check that it fully functions like it should. If diagnostics are available, run them.
    A. If everything passes, record the date the burn-in was run, and keep it with any documentation or receipt for the product.
    B. If it fails, read the section called "WARRANTY STATEMENT" for further information.

The 128 K RAMCARD can be tested by you if your dealer has made the diagnostic disk available for you. Remove any cartridges, be sure J1 is configured for 128 K, and boot up the disk. It will eventually display a screen similar to Atari DOS, but titled differently. Select the "L" option and press return. Type "RAM*" and press return. A diagnostic will test your 128 K RAMCARD. Watch for any "FAIL" messages, which last for only a few seconds. Note which test fails before contacting CCP. If the test completely passes, press "X" to reboot or power down ten seconds and reboot. When the screen appears that allows you to select the "L" option, type "MEM*" and another test will load. Press the spacebar to begin and press it again after the banks are loaded with the bit pattern indicated at the top of the screen. If no failures are present, reverse the bit pattern by pressing "R", reload and run by spacebar again. If any failures occur, note where before contacting CCP.

Sometimes cleaning the gold fingers on the 128 K RAMCARD with a clean white sheet of paper or a cotton swab dipped in denatured alcohol will solve a problem.
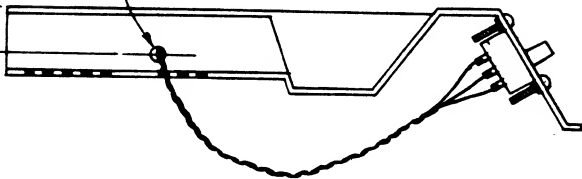
Sometimes cleaning the area where all the slot cards are located helps. Debris may have fallen into a slot and possibly prevents a good connection for a ramcard or the romcard.

If your 128 K RAMCARD does not seem to be working properly, please contact Crystal Computer Products, instead of your dealer. CCP will need to know the serial number of your board, the date of purchase, when or if the warrany application was mailed, your name and the name of the software being used, if any.

Additional information can be found by copying a "*.DOC" file from the diagnostic disk to either the screen or a printer.

Revision 3.

ALUM. CASTING

16K-RAM
16K-RAM
10K-ROM

TOP VIEW

FROM INSIDE OF
CARD CAGE TO HOLE

2.20

PARTIAL VIEW
OF PLASTIC
CASE

MOUNTING
PANEL ENLARGED
FOR CLARITY

.750 .750
.35   .85
.30
.100

5/64 DIA.
(2 PLCS.)

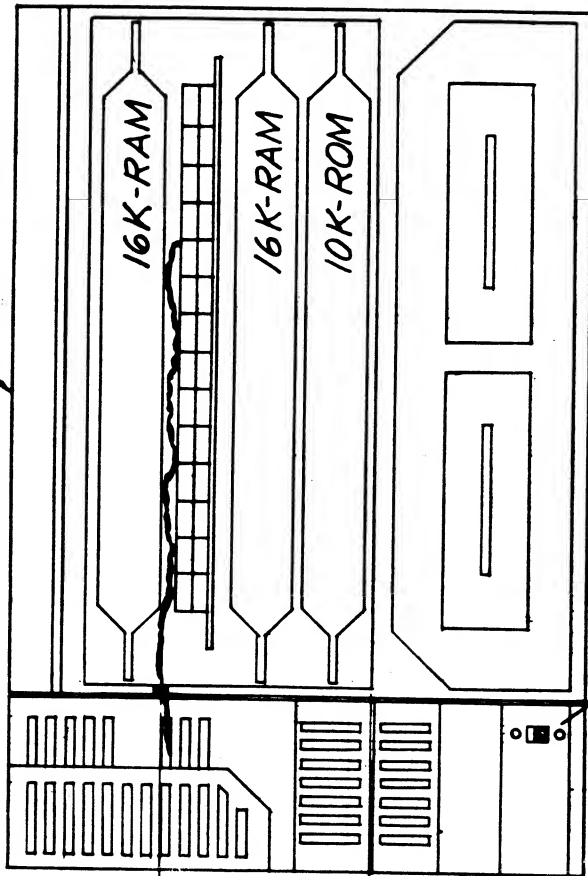FRONT VIEW

.50 FROM TOP EDGE
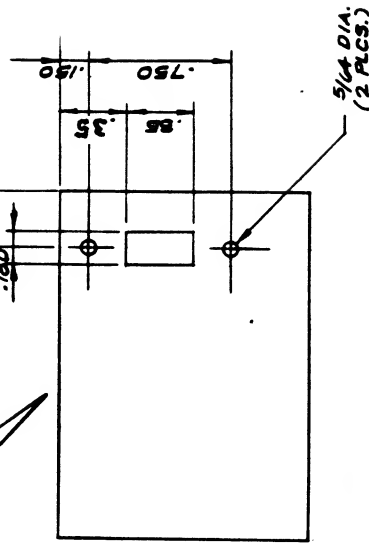OF ALUM. CASTING

5/32 DIA.

SIDE VIEW

The suggested method for modifying the switch mounting panel is this: disassemble case from computer; use a pencil and 6" steel scale (ruler) with 1/100 per inch markings for laying out drill and cutting areas; drill smallest holes first, change to 5/32 bit to drill aluminum casting (measure and mark it first); using the same bit, drill two holes within rectangular cutout area, and finish out rectangular hole with a sharp Exacto knife; using same knife or a dremel tool a little clearance cutting will be necessary on the backside of the panel.

AtariWriter Plus patch for AXLON compatible memory upgrades

The following patches can be performed to a backup copy of the AtariWriter
Plus 130XE version to make it usable with an AXLON compatible memory
upgrade on an 800.   The patches are performed with a sector editor
(OMNIMON or almost any disk utility will do) by reading the indicated
sector into memory, changing the indicated bytes in the WAS column to the
bytes in the NOW column, and writing the sector back out to the disk.   If
the bytes in the WAS column do not match, then you must have a newer
version and this patch will not work.   If for any reason you cannot or do
not want to do this patch yourself, send a copy of your AtariWriter Plus
disk (130XE side) with $10.00 to:

<div align="center">

CDY CONSULTING
421 HANBEE
RICHARDSON, TX 75080
(214) 2352146

</div>

```
                              WAS              ->          NOW
    sector  $1A              ***** AtariWriter + *****
       byte $55: 0A 0A                          -> EA EA
       byte $59: AD 01 D3 29 E3                 -> EA EA EA A9 00
       byte $61: 01 D3                          -> FF CF
    sector  $57
       byte $76: EF 8D 01 D3                    -> 04 8D FF CF
    sector  $58
       byte $0C: 01 D3 01 D3 EF                 -> FF CF FF CF 04
    sector  $7B
       byte $74: 01 D3 01 D3 EB 01 D3 01 D3 -> FF CF FF CF 03 FF CF FF CF
    sector  $7C
       byte $00: FF                             -> 00
    sector  $D8
       byte $6C: FF 8D 01 D3                    -> 00 8D FF CF
       byte $74: E3 8D 01 D3                    -> 01 8D FF CF
       byte $7C: E7                             -> 02
    sector  $D9
       byte $00:    8D 01 D3                    ->    8D FF CF
       byte $07: EB 8D 01 D3                    -> 03 8D FF CF
       byte $0F: EF 8D 01 D3                    -> 04 8D FF CF
    sector  $1F9
       byte $01: EB 8D 01 D3                    -> 03 8D FF CF
       byte $09: EF 8D 01 D3                    -> 04 8D FF CF
    sector  $204
       byte $13: AD 7F BB                       -> A9 00 EA
    sector  $14D              ***** ProofReader *****
       byte $7C: FF                             -> 00
    sector  $14E
       byte $05: E3                             -> 01
       byte $0B: E7                             -> 02
       byte $0F: FF                             -> 00
       byte $11: 01 D3                          -> FF CF
    sector  $1A4              ***** MailMerge *****
       byte $02: 01 D3 01 D3 FF                 -> FF CF FF CF 00
```